

ABSTRACT

Delivering heat from modern high temperature solar collectors to a hot water storage tank's internal heat exchanger is more effectively done using a fluid filled, thermal expansion pressurized, fluid heat transfer loop, using a water based antifreeze, a pressurized radiator, a pressure cap/vacuum relief and overflow reservoir. Fluid at 16 psi boils at 265°F. The fluid filled pressurized loop automatically eliminates trapped air using a pressurizing/vacuum recover cap and overflow reservoir with gas and liquid entering below the waterline so only liquid can return to the loop. The system protects itself from loss of fluid circulation by boiling under pressure. The steam produced by the solar collector is either condensed in the pressurized liquid to air radiator giving up its heat to the outside air, or the steam pressure will be used to open dampers on the solar collector allowing air to pass over and cool the solar collector.